

# Endovascular Resuscitation: The Emergency Physician has a Key Role to Play

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Endovascular resuscitative techniques in the critically hemorrhaging or otherwise ill patient are evolving at a phenomenal pace. One can review the articles appearing on a month-to-month basis in journals like this and others to see evidence of this.

From the onset, there has been much debate about who would and should be best placed to perform procedures such as resuscitative endovascular balloon occlusion of the aorta (REBOA) or extracorporeal membrane oxygenation (ECMO). Is it primarily the domain of the surgeon, and if so the trauma surgeon, cardiothoracic surgeon, or vascular surgeon? Should the surgeons defer to the interventional radiologist?

These arguments miss a very important point – the reality is that effective management of these critically ill and injured patients requires a collaborative team approach. Everyone involved, from the emergency physician to the intensivist, interventionalist, and surgeon, not to mention our nursing and paramedical colleagues, have “skin in the game” as we say in the USA. The goal of this team sport is clearly reaching the appropriate endpoint of restoration of normal physiology, be it by stopping bleeding or restoring circulation.

Let’s talk more about the role of the emergency physician. Emergency medicine (EM) as a specialty has similarly developed at a faster pace than others in the house of medicine. EM has established itself as a specialty with a unique skillset: specialists able to manage the undifferentiated critically ill patient. Advanced airway management, ultrasound techniques, and invasive procedures including vascular access are built into the current curriculum of most EM training programs worldwide [1]. These were procedures and techniques traditionally in another specialty’s realm, learnt and adapted to the EM environment with great success. Many were brought on by an understanding that critically unwell patients would need these interventions in the moment. These patients do not have the luxury of time available to them (especially when presenting out of hours or at a facility with limited support services) for another specialist to provide said intervention.

A similar principle applies to EM involvement in endovascular resuscitative techniques, which often need to be initiated in a time-critical fashion. Sometimes the emergency physician is the sole physician at the facility where the patient presents – a large part of the USA, for example, lies over 60 minutes away from access to a level 1 or level 2 trauma center [2]. Even in a busy academic center, the surgeon may be scrubbed in the operating room at the time of patient arrival or be busy with the care of another patient should there be multiple simultaneous patient attendances. As the other available senior physician, the emergency physician is then best placed to undertake the advanced open or endovascular intervention required to buy time to get the patient to definitive care.

In some countries, emergency physicians are intimately involved in providing care in the prehospital environment. We have already seen successful use of prehospital REBOA by the London Air Ambulance service, led primarily by

emergency physicians as part of a robust trauma system [3]. Similar capabilities are being adopted by the Japanese and more recently French prehospital systems, both of which integrate physician prehospital response. This capability also extends to other endovascular techniques such as ECMO [4].

In the military, close collaboration between emergency physicians and surgeons, working as part of far-forward specialist surgical teams, has successfully allowed for the use of endovascular techniques like REBOA by either type of physician [5,6]. Cross-training of skills can allow maximal utilization of limited resources and temporizing of patients in, for example, mass casualty incidents [7].

We are facing an increasing burden of potentially salvageable critically ill and injured patients [8]. Rather than isolating skills within silos of specific proceduralists, enlightened systems should focus on learning from those that have integrated all resuscitation team members in these evolving techniques. Emergency physicians remain a critical part of the resuscitation team, from the prehospital environment, the small community hospital, or at the academic trauma center, military or civilian. They possess a unique skillset that can be built upon to successfully train in the safe implementation of endovascular techniques [9]. Incorporating them into training and sharing knowledge will empower those working within appropriate systems to implement these techniques in the right scenario.

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